Sharad J. KADBHANE, Vivek L. MANEKAR

AN EXPERIMENTAL STUDY ON THE GRAPE ORCHARD:
EFFECTS COMPARISON OF TWO IRRIGATION SYSTEMS

Abstract

Table grape (Vitis vinifera cultivars) is a major cash crop in the Nashik district of India, which requires irrigation water throughout the year as per demand instantly. Canal irrigation is the adopted irrigation systems in the study area, but canal irrigation has got several serious disadvantages, such as mismatching rotation schedules and crop water demands, water allotment system and restrictions on the use of efficient irrigation methods. The storing the canal water in the farm pond instead of directly applying to the field using the free flooding method is alternate solution to overcome the disadvantages of the canal irrigation system. Once the canal water storing in the pond, it increases the possibilities to use the advance irrigation system like drip, subsurface, sprinkler etc. to enhance water use efficiency. The comparative study between the canal water directly applying for the field and canal water storing in the farm pond then use for irrigation, executed through the field experiments carried out on the grape orchard during a period April 2013 to March 2016. Results have been evaluated based on grape yield, water-productivity, berry size, and biomass. Water productivity (kg·m⁻³) with respect to water delivery to crop through the pond irrigation method was found 37% higher than the canal irrigation method during the study period. Based on the results, this study recommended the use of the farm pond to store the canal water and use it as per crop demand using advance irrigation systems.

Key words: agro climatic zone, canal irrigation, evapotranspiration, farm pond, table grape, water productivity